



G3 GRANT

LID RETROFIT FOR THE ASHLAND MUNICIPAL PARKING LOT

GREEN STREETS GREEN JOBS GREEN TOWNS

PROJECT INFORMATION:

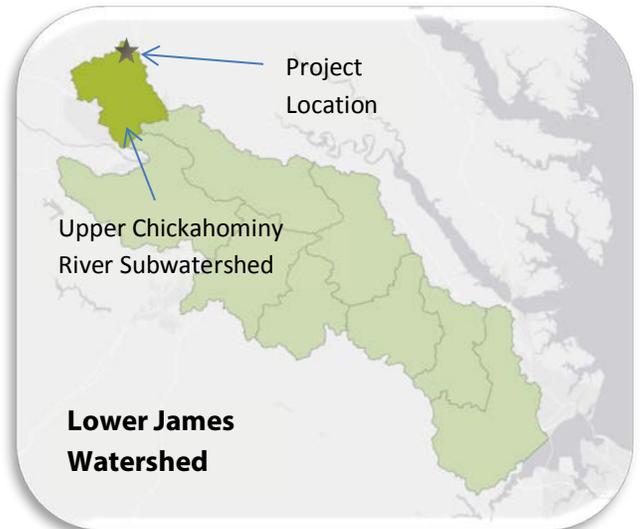
Location:	Ashland, VA	
Project Type:	Design and Construction	
Restoration Practice:	Bioretention, permeable pavement, underground storage	
Funding:	Chesapeake Bay Trust and U.S. Environmental Protection Agency	
G3 Amount Awarded:	\$25,000	
Additional Funding Leveraged:	\$250,000	
Status:	Completed	Key Words: Green parking lot,
	Virginia, permeable pavement, bioretention	

PROJECT OVERVIEW

In 2012, the Town of Ashland received a \$25,000 Green Streets, Green Jobs, and Green Towns (G3) grant to co-fund the design and reconstruction of part of an existing municipal parking lot into a “green,” low-impact parking



lot. The newly reconstructed lot is one of the first to combine permeable pavers with rainwater storage beneath and a commercially-produced bioretention device in the parking island to slow down, capture, and treat polluted rainwater and snow melt. It provides enough capacity to fully store and treat all of the rainwater from a typical 1-inch storm event—along with a usable parking lot and improved curb appeal.



Project Location: Upper Chickahominy River Subwatershed (James River), Town of Ashland, Hanover County, VA

The Retrofit: Ashland’s Town Engineer stands in the parking lot’s new bioretention island. The section at right remains as an asphalt lot.

In 2013, Ashland received the Dave Pearson Watershed Excellence Award from the Virginia Lakes and Watersheds Association in recognition of the Town’s contribution to protecting the environment. The project was also awarded a Vision

Award from the Urban Land Institute of Richmond in 2013 and was recognized by the Ashland Main Street Association with a “You’ve Been Noticed” award for improving the central business district streetscape.

TOWN OF ASHLAND BACKGROUND

Ashland is located 15 miles north of Richmond. Originally developed by the Richmond Fredericksburg and Potomac (RF&P) Railroad Company as a mineral springs resort in the 1840s, it still retains its small town character today. The downtown area revolves around the railroad track, and it is the only Town where you can still board a train on Main Street and travel up the East Coast. The 7.2 square mile area is home to over 7,000 people and serves as part-time residence to the students of Randolph–Macon College.



Train Depot. Ashland’s 1920s train depot now serves as the Town’s visitor center. Or, you can board a train and head up the East Coast.

Over the years, Ashland has successfully promoted environmental stewardship and green initiatives. The Town has been designated a Tree City USA for 22 years and has set a goal of increasing its current tree canopy coverage from 52% in 2008 to 57% by the year 2030. Town Officials have worked closely with developers to advocate LID features to reduce local flooding and runoff pollution to Stony Run – a 7 ½ mile tributary to the Chickahominy River. The Town has also invested money and time towards stream restoration efforts such as the Randolph-Mason College student-led effort to restore a heavily urbanized creek and conduct a ten-year study to determine the impacts on fish and wildlife habitat and sediment pollution. The G3 grant project has helped to fuel these efforts further by encouraging smarter, greener designs in the Town’s downtown area.

LID RETROFIT FOR THE MUNICIPAL PARKING LOT

Ashland’s Town Hall is located downtown in walking distance to the Town’s historic train station. The Town Hall municipal parking lot serves as a multi-functional space for residents and visitors. In 2010, much of it was torn up for subsurface



Multipurpose Lot. The multifunctional municipal parking lot demonstrates that stormwater management can be attractive and functional.

utility repairs. Town officials and community members agreed that retrofitting the parking lot would provide an excellent opportunity for the Town to promote more sustainable stormwater runoff methods. In 2011, the Town Council began to set aside money from its capital improvement fund, and in 2012, the Town was awarded a \$25,000 G3 grant to prepare a design.



Permeable Pavement. The parking lot's pavers have small gaps between them that allow water to infiltrate below.

The 0.3 acre parking lot receives polluted runoff from a 1-acre drainage area. To help treat and control the rain water flowing into the parking lot from nearby rooftops and pavement as well as rainwater from the parking lot itself, an engineering firm prepared an innovative green infrastructure retrofit design. When water hits the parking lot, it drains into the voids of a permeable interlocking concrete pavement system through 18 inches of open-graded stone. Here, it either soaks into the ground below, or drains into a commercial

bioretention basin that borders the lot and, using a combination of native vegetation and specially designed soils, soaks up additional water and pollution. The bioretention media helps remove the majority of key pollutants from the runoff.

The entire system is designed with enough space to capture and treat more than 91,000 gallons of rain water. This means that for the typical smaller 1-inch storm event, there's zero runoff. In total, the treatment system can slow down, capture, and treat up to 5 inches of rain in a 24 hour period.

Pollutant Removal Rates	
Dirt particles (TSS)	85%
Phosphorous	60 - 70%
Nitrogen	43%
Oil & Grease	> 93%

CHALLENGES AND LESSONS LEARNED

From design to construction, the Town was able to complete the entire project in about 6 months. Construction started in October 2012, with the majority of it completed by early November 2012 in time for Ashland's annual train day festivities. A few minor challenges crept up during construction but were quickly overcome. After removing the existing asphalt, it was found that the underlying sub-grade was comprised of poor soils with very low infiltration capabilities, and a geo-grid had to be added to help support traffic loadings. Problems related to the compaction of the open-graded stone made it difficult for loaded dump trucks to move across the site. To

avoid similar future problems, more detailed specifications on compaction requirements are requested as part of the review process.

The Town's most significant challenge, however, was staying within budget. The construction phase went \$20,000 over the initial budget, costing more than \$15 per square foot to construct. A generous donation of materials defrayed many of the unanticipated costs, allowing the project to be completed on schedule.

LEVERAGING RESOURCES AND ACTION

Although a small portion of the overall cost, the Town of Ashland's \$25,000 G3 grant helped the Town gain the support necessary to successfully turn their existing asphalt parking lot into a green, low impact lot. In total, the Town utilized \$220,000 of its own funds plus, according to the Town's estimate, approximately \$30,000 in locally donated materials. Ashland cites the generosity and devotion of its team of designers, engineers, suppliers, and construction crew for turning the project into a highly visible prototype and educational instrument.

The Town has since launched an outreach program for students and other municipal agencies to demonstrate how permeable pavement and bioretention work in series, allowing people to observe the discharge pipe and learn about the runoff reduction benefits of stormwater management. These educational components have been created to encourage a wider understanding and use of LID technologies based on the proven success of this project – which is a great indicator that there will be a growing number of sustainable developments in and around the Town of Ashland.

Ashland now has other low-impact projects in the works, such as retrofitting the Police Department's parking lot with permeable pavers. As part of the parking lot retrofit, a stream adjacent to the Police Department lot will be restored. For other projects, construction has already begun. This includes the resurfacing of 550 linear feet of a neighborhood street with permeable pavers and a bioretention system, and the first phase of construction in a streetscape overhaul to help address stormwater drainage problems via bioretention systems in the Town's central downtown commercial strip along Railroad Avenue.

For more information, visit: <http://www.town.ashland.va.us/>

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P. 3, permeable pavement close-up by AMT Engineering